

KLAMATH NATIONAL FOREST
MIS Project Level Assessment Part II of II
Effects of Project on MIS Habitats

PROJECT NAME: Salmon Salvage Project

RANGER DISTRICT: Salmon Scott River Ranger District

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I. INTRODUCTION

The purpose of this assessment is to evaluate landscape and project-level impacts to habitat conditions associated with the six Species Associations and related Management Indicator Species (MIS) identified in the Klamath Land and Resource Management Plan (Forest Plan) on pages 4-30 through 4-32.

Project Location Information

For a description of the proposed project area and location, refer to chapter 1 of the Environmental Assessment (EA).

II. FOREST PLAN SPECIES ASSOCIATIONS AND MIS SELECTED FOR THE SALMON SALVAGE PROJECT

Project Level Assessment Checklist

A review was conducted using the Project Level Assessment Checklist to determine: 1) if the project is within the range of any MIS, 2) if habitat for which the species is an indicator is present within the proposed project area, and 3) if there are potential direct, indirect, or cumulative effects on habitat components. Species associations and MIS associated with habitats that may be affected by the project will be analyzed below.

The following species associations and MIS were selected for analysis for the Salmon Salvage project due to the presence of suitable habitat that may be impacted by the project:

River/Stream Species Association

Rainbow trout
Steelhead
Tailed frog
American dipper
Northern water shrew
Long-tailed vole

Snag Species Association

Red-breasted sapsucker
Hairy woodpecker
White-headed woodpecker
Vaux's swift
Downy woodpecker
Pileated woodpecker
Black-backed woodpecker

Marsh/Lake/Pond Species Association

Western pond turtle

The following associations and species were not selected for further analysis due to absence of habitat or because the project will not directly or indirectly affect the habitat (refer to Part I, the checklist, for rationale):

Hardwood Species Associations

Acorn woodpecker
Western gray squirrel

River/Stream Species Association

Cascade frog

Marsh/Lake/Pond Species Association

Northern red-legged frog

Grassland/Shrub-Steppe Species Association

Pronghorn
Montane vole
Loggerhead shrike
Swainson's hawk
Sage thrasher
Burrowing owl

Mature Ponderosa Pine Species Association

Flammulated owl
White-headed woodpecker
Pinyon jay

III. DESCRIPTION OF THE *ALTERNATIVES* AND PROJECT AREA

The alternatives are designed to meet the purpose and need for the project. They are described in sections 2.1, 2.2 and 2.3 of chapter 2 of the EA; this includes acres by treatment types. The Salmon Salvage project area is addressed in section 1.3 of chapter 1 of the EA.

Project design features, as displayed in section 2.4 of the EA, will be implemented to minimize or eliminate negative effects to resources. Project design features relevant to MIS are Wildlife-1 through Wildlife-5 and Fish-2.

IV. MIS ENVIRONMENTAL BASELINE AND EFFECTS OF THE PROJECT

The Salmon Complex Fire burned an area that has experienced fire in recent time. Some of the forest habitat that wasn't burned at high severity in previous fires was killed by the Salmon Complex Fire. The landscape is abundant in the number of snags, but it is deficient in mid- to late-successional habitat. For many of the Management Indicator Species, the wildfire-affected area has removed all or most of the habitat and habitat is not expected to return to pre-fire condition for many years.

RIVER/STREAM SPECIES ASSOCIATION

Rainbow trout and steelhead, tailed frog, American dipper, northern water shrew, and long-tailed vole were selected as Management Indicator Species because habitat for these species is in or adjacent to the project area (see MIS Report I).

Fish (Rainbow Trout/Steelhead Trout)

Refer to the Salmon Salvage Aquatic Resource Report for direct, indirect, and cumulative effects to these species. The information contained below is a summarization of the more thorough aquatic analysis discussed in the Resource Report.

Environmental Baseline

Steelhead/rainbow trout habitat is found in NF Salmon River, Little NF Salmon River, and Kelly Gulch. Resident rainbow trout are found in Cronan Gulch and Garden Gulch. Jackass Gulch and Specimen Creek (steelhead/rainbow trout) are excluded from analysis because Project effects are limited in scope to a few hazard trees on the ridgeline with no effect to the aquatic system. Big Creek (rainbow trout) is excluded because no Project activities will be occurring within its drainage. For the project, the area of effect is considered to be fish-occupied perennial systems adjacent and downstream of Project components within the project boundary – approximately 15 miles of habitat for steelhead, and 15.5 miles of habitat for rainbow trout. Actual area of effect may be much smaller, and is dependent upon the Project component under consideration (i.e., drafting and Kelly Gulch culvert replacement will produce effects immediately adjacent to the site, while salvage harvest effects will be generalized across a drainage).

Effects of the Proposed Project Alternative 1

Under this alternative, the Project will not happen and no management actions will be taken. Legacy site repair will not occur. In most cases, the effect to fish and fish habitat of not addressing these sites is not measurable due to location upon the landscape, small footprint (individually and cumulatively) and distance from fish-occupied waters. The exception is the Kelly Gulch culvert which will continue to function as the upstream limit of fish within the drainage.

Alternative 2

Direct – Drafting at fish-occupied sites is likely at three locations upon the NF Salmon River. As drafting will occur at an established, hardened river access point, there will be no new construction and, therefore, no alteration of the existing riparian or new delivery of sediment to the system. Possible area of very minor and insignificant impact in the analysis area would be the immediate vicinity of the drafting area when the pump is in operation. The use of a NOAA approved fish screen and pumping rate restrictions to less than 350 gallons-per-minute (gpm) or 10% of the flow will minimize intake impingement and other local impacts. Water drafting will also result in slight, temporary decrease in flow, as well as a small sediment plume, both of which are considered insignificant when drafting from larger, perennial system such as NF Salmon River. Given the size of the NF Salmon River, sufficient room is present for adult and juvenile fish to move away from the screen. When drafting stops, stream flow is returned to pre-draft conditions, so no long-term effects will occur. Water temperature and other water quality elements will not be affected.

Replacement of the Kelly Gulch culvert will require dewatering the channel prior to commencing construction activities. This site is within the range of resident rainbow trout; and there is the possibility of rearing steelhead juveniles. Potential adverse effects due to dewatering occurs only if salmonids are present, even after measures are taken to chase and exclude fish from the site. Mortality may occur to fish if all individuals cannot be removed prior to dewatering (i.e., due to hiding under rocks).

Indirect – The degree of effect to habitat is dependent upon the specific action considered and location in regards to fish-occupied waters. Overall, any negative indirect effects to River/Stream habitat indicators will be short-term and temporary.

Temperature, a water quality component, is not expected to be affected in a biologically meaningful manner by Project activities. Elements with the potential to affect temperature include removal of vegetation and trees within Riparian Reserves (RR) which could reduce stream shading and water drafting.

- Effective shade in the Project area will not be reduced by the Project. Up to thirty-seven hazard trees will be felled within RR along the Kelly Gulch mainstem. However, topography and vegetation immediately adjacent to the stream have the greatest local effect to shade, with only a few of the marked trees in a location upon the landscape contributing to Kelly Gulch overstory. Additionally, some vegetation will have to be removed to permit reconstruction of the Kelly Gulch culvert, with

subsequent regrowth expected to quickly re-establish. Overall, temperature in Kelly Gulch will not be impacted. Elsewhere, hazard tree removal will occur in RR associated with fishless creeks distant from fish habitat. Salvage harvest will not occur within RR.

- Water drafting results in minor short-term reductions in stream flow during operations. Drafting will follow NOAA specifications (NOAA 2001) when it occurs within Coho salmon CH and Forest Service BMPs when it occurs outside of CH. Drafting from the NF Salmon River will not have any meaningful impact to temperature due to the stream's relatively large size and flow volume which would render any changes in flow due to drafting as insignificant to overall stream temperatures. Water drafting at the Garden Gulch sites occur within perennial, fishless locations of which the closest is 0.6 miles upstream from fish habitat. Due to resource protection measures, presence of additional sources of cold water in the watershed, and distance of drafting from fish-occupied waters, there is not likely to be any detectable effect to stream temperature from drafting at these sites.

Turbidity, a water quality component, is expected to increase during in-channel activities associated with drafting in the NF Salmon River and the Kelly Gulch culvert replacement. For drafting, this will occur as a small, localized plume as hose is set in and taken from the river. In the case of culvert construction, a sediment plume would be expected if work would occur while the channel was wet and for a short time afterwards as the site settled. However, BMPs require water to be diverted around the site during in-channel component therefore a short-term minor pulse of sediment may only occur when water flow is returned to the site. Turbidity was determined to have an insignificant, temporary impact to fish where actions occurred less than 300 feet from occupied waters; and where in-channel actions were greater than 300 feet from fish, no effect is expected. The effect to fish downstream for both activities will be temporary (short-term) and not biologically meaningful.

Kelly Gulch culvert at the 40N42 crossing is currently a complete blockage to upstream habitat potentially suitable for fish. The proposed culvert replacement will completely restore fish access in this area of Kelly Gulch.

Ground-disturbing actions within the project area have the potential to mobilize fine sediment, thereby affecting bottom substrate composition, although it will not be sufficiently significant to alter existing habitat values. The only activity with the potential to directly affect substrate is the Kelly Gulch culvert replacement, with other activities either not happening within RR (salvage harvest) or minimally ground disturbing (hazard tree removal). Regarding culvert reconstruction, the project level Biological Assessment for this project determined that any changes to substrate due to this action would likely be insignificant. In other words, while fine sediment may enter stream systems, it would be insufficient to alter habitat values. On a larger scale, hydrologic function within the Project area will be maintained: as per CWE modeling, no accelerated surface runoff is expected and landslide risk will not be substantially elevated above existing (post-fire) background values.

The Kelly Gulch culvert replacement occurs in fish-occupied waters and will affect refugia. The effect of the proposed upgrade is to benefit refugia. The culvert replacement provides a direct benefit to aquatic organism passage and makes additional habitat available to fish in Kelly Gulch.

Streambank work will occur in conjunction with the Kelly Gulch culvert. The spatial extent of bank work is expected to be minimal. The most important short-term impact to aquatic organisms and habitat due to streambank impacts at Kelly Gulch will be to turbidity and substrate (both insignificant). Short-term stability, to a level comparable pre-construction, will be ensured via the inclusion of rip-rap, where necessary, to armor against high flows which may occur in the seasons following construction. The re-establishment of riparian vegetation will permit long-term stability.

Disturbance indices will increase in some watersheds as a result of Project implementation. The ERA, USLE, and GEO models track various aspects of human and natural impacts upon the landscape and geologic environment. ERA (“Equivalent Roaded Area”) provides an accounting system for tracking disturbances that affect watershed processes, in particular changes in peak runoff flows influenced by ground disturbing activities; USLE (“Universal Soil Loss Equation”) tracks surface erosion and sediment delivery in the first year following project completion; and GEO estimates sediment delivery from mass wasting (e.g., landslide events) for the first decade after project completion. A threshold of “1” generally indicates an elevated risk of impact from a given model, and the point where departure from natural background variation may begin to be discerned. The watersheds affected include Lower Little NF Salmon River, Olsen Creek-NF Salmon River, and Shiltos Creek-NF Salmon River. Model estimates for ERA and USLE remain below critical threshold for all watersheds; as does the GEO component for the Shiltos Creek-NF Salmon River drainage. Where model estimates for GEO are over threshold, it is primarily due to the Salmon River Complex fire, and the additional contribution from the Project is minimal and will not be discernable from the much larger risk increase resulting from the fire. Therefore, the Project will experience no functional change in disturbance indices and there will be no measurable effect to fish habitat beyond that caused by the fire.

There will be no watershed-scale changes to peak/base flows Project activities due to the upslope position, localized impacts, relatively small footprint, and functioning buffering capacity of intervening RR habitat. This is reflected in ERA model output, which remains below the threshold of concern. At the site level, drafting may temporarily affect flows. NOAA drafting specifications (NOAA 2001) and BMPs guide operations to minimize effect of water withdrawal on aquatic habitats. Drafting will occur in fish-occupied waters of the NF Salmon River, and therefore has the potential for short-term, indirect effects downstream. However, in large systems, flows are not measurably affected by typical short-term drafting operations such as those required to fill a water tender. Water drafting at the Garden Gulch sites, where no fish are present, will also result in localized changes in flows, the closest location of which is 0.6 miles upstream from fish habitat.

The drainage network can be roughly considered in light of road density, number of road crossings, and overall ERA, but primarily it is an aspect of how “connected” a drainage feature (road, ditch, or other element) is to the natural hydrologic system. The Project will not alter the miles of roads upon the landscape. All temporary roads will be placed upon existing roadbeds, which will minimize increases in drainage network from this Project component. However, the construction and/or reoccupation of existing landings and skid trails will create a temporary increase in local drainage network. Any effects will be confined to salvage units in upslope areas. Resource protection measures will ensure that drainage impacts from landings and skid trails are short-term and localized. This is because skid trails will not cross perennial streams, and intermittent streams will only be crossed while dry and at pre-approved locations. In the long-term, there will be no increase in the drainage network because landings and skid trails will be rehabilitated. Conversely, after use during the Project, temporary roads will be hydrologically stabilized. This includes constructing waterbars, outslowing road prisms if appropriate, and obliterating access to the road. Furthermore, the Garden Gulch trail will incorporate tread restoration so as to be suitable for non-motorized use. These latter actions are expected to insignificantly decrease human-caused increases in the drainage network, thereby creating a better post-Project hydrologic condition compared to pre-Project.

Except for hazard trees in Kelly Gulch, water drafting, and the Kelly Gulch culvert upgrade, Project activities which occur within Riparian Reserves are not in or adjacent to streams occupied by fish. New landings will not be constructed within RR, although existing ones may be reoccupied. Where existing RR landings are used, they will be stabilized after the Project. Project activities do include hazard tree abatement within RR. However, resource protection measures will ensure RR character will not be detrimentally altered, including retention of stream shade and woody debris maintenance along the Kelly Gulch mainstem. At the site level, the Kelly Gulch culvert upgrade will minimally affect RR. Brushing and vegetation removal next to the road will be necessary for equipment access and culvert replacement. Similarly, actions associated with maintenance of water drafting sites – brushing, grading, rocking approaches – will be confined to the road and adjacent vegetation. There will be no long-term effects to RRs from either culvert construction or drafting because the effect will be localized and will not affect the functional level of the RR indicator.

Overall, individual steelhead or rainbow trout may be affected and there may be some short-term, insignificant impacts to habitat. Except for removal of a fish barrier and an insignificant benefit via a decrease in (human-created) drainage network, no long-term effects to fish or their habitat are expected.

Cumulative Effects - There will be minimal cumulative impacts from adding the effects of this alternative to those of reasonably foreseeable future actions. Where there is spatial or temporal overlap of projects currently undergoing implementation, the effects of these projects have already been accounted for in the existing environment. Where future actions do overlap with the Project, there will be insufficient additive impact to adversely affect steelhead or resident rainbow trout.

Alternative 3

Direct and Indirect – Alternative 3 differs from alternative 2 in regards to magnitude of impact.

Direct and indirect effects from water drafting will remain the same.

This alternative proposes to eliminate salvage harvest units, although hazard tree felling and legacy site repair, including the Kelly Gulch culvert upgrade, would be as described for Alternative 2. Most activities required to support salvage harvest, such as landing and temporary road construction, would no longer be required, although water drafting for dust abatement may still occur. Because salvage harvest, and its associated actions, creates greater ground disturbance than other Project elements, post-Project changes in CWE models show a lesser increase than under the Alternative 2 scenario. It is doubtful the computer modeling will translate to real-world distinction between the two alternatives because natural variation will overwhelm the small differences in post-Project CWE outputs. Regardless, there will be no significant effects to aquatic habitat because models either remain below the critical threshold or do not contribute to existing over-threshold risks. Beneficial effects due to treatment of the Kelly Gulch culvert remain as described for Alternative 2. Conversely, there will be no change from the baseline drainage network condition because there will be no need for temporary roads to access salvage units.

Cumulative – Cumulative effects will be the same as described under alternative 2.

Frogs (Tailed frog)

Environmental Baseline

Tailed frogs may occur in the 24 miles of intermittent and 39 miles of perennial streams within and immediately adjacent to the project area. No surveys to verify the presence or abundance of this frog species have been conducted within the project area, although an individual was reported during a 1991 fish and habitat survey in the upper Little NF Salmon River at the Wilderness boundary. This frog species is expected to occur in suitable habitat within portions of the project area.

Effects of the Proposed Project

Alternative 1

Under this alternative, the Project will not happen and no management actions will be taken. Legacy site repair will not occur. In most cases, the effect to frog and frog habitat of not addressing these sites is not measurable due to location upon the landscape, small footprint (individually and cumulatively), and distance from fish-occupied waters. The exception is the Kelly Gulch culvert, which will continue to function as a barrier to aquatic organisms.

Alternative 2

Direct – Drafting at sites potentially occupied by frogs is likely within the Project area. As drafting will occur at established access points, there will be no new construction and, therefore, no alteration of the existing riparian or new delivery of sediment to the system. Possible area of very minor and insignificant impact in the analysis area would be the immediate vicinity of the drafting area when the pump is in operation. At drafting locations within Coho salmon CH, the use of a NOAA approved fish screen and pumping rate restrictions to less than 350 gallons-per-minute (gpm) or 10% of the flow will minimize potential impacts. At drafting sites outside of CH, drafting rates are restricted to less than 350 gpm or less than 50% of the surface flow (whichever is less); and drafting ceases once bypass flow drops below 10 gpm. When drafting from fish-bearing reaches, screens will be used to avoid direct impacts to aquatic life. Water drafting will also result in slight, temporary decrease in flow, as well as a small sediment plume, both of which are considered insignificant. When drafting stops, stream flow is returned to pre-draft conditions, so no long-term effects will occur. Water temperature and other water quality elements will not be affected.

Replacement of the Kelly Gulch culvert will require dewatering the channel prior to commencing construction activities. The status of tailed frog in Kelly Gulch is unknown. Potential adverse effects due to dewatering occur only if frogs are present. The life-stage affected would be tadpoles because juveniles and adults would be able to move overland away from the affected area. Mortality may occur to frogs if individuals cannot be removed prior to dewatering (i.e., due to hiding under rocks).

Indirect – The elements comprising the Project are varied, and degree of effect to habitat is dependent upon specific action considered and location in regards to frog-occupied waters. Overall, any negative indirect effects to River/Stream habitat indicators will be short-term and temporary.

Turbidity will be as described for steelhead/rainbow trout, with the additional consideration of the three Garden Gulch drainage water drafting sites. The effect to frogs downstream (within 300 feet) of any sediment plume will be temporary and not biologically meaningful. Frogs outside the 300 foot distance will not be affected.

Temperature will be as described for steelhead/rainbow trout. There is the potential for frogs to be present in perennial/intermittent channels adjacent to and within Project units. However, as effective shade within the Project area will not be reduced by Project activities, any impacts to temperature will be insignificant and will not affect frogs.

Kelly Gulch is not necessarily a blockage to amphibians such as tailed frog as juveniles and adults can move overland to bypass the culvert. However, the culvert does restrict the movement of tadpoles, if such are present. The proposed culvert replacement will allow for unimpeded access by all lifestages of tailed frog and other aquatic organisms within the perennial extent of Kelly Gulch.

Ground disturbing actions within the Project area have the potential mobilize fine sediment, thereby affecting bottom substrate composition, although it will not be sufficiently significant to alter existing habitat values. In general, substrate as described for steelhead/rainbow trout also applies to frogs. However, frogs have the potential to be present in portions of the Project area not accessible to fish, and therefore may experience an increased exposure to fine sediment. On the other hand, salvage harvest will not occur within RR and hazard tree abatement causes minimal ground disturbance. Therefore, the risk associated with fine sediment to frog and frog habitat is insignificant.

The effect to refugia will be as described for steelhead/rainbow trout. Tailed frogs are expected to benefit from the Kelly Gulch culvert replacement via increased connectivity between habitats.

Streambank impacts and effect to aquatic habitat as a result of the Kelly Gulch culvert replacement will be as described for steelhead/rainbow trout.

The disturbance indices will be as described for steelhead/rainbow trout. The Project will experience no functional change in CWE models and therefore there will be no measurable effect to frog habitat.

Alterations in peak/base flows will be as described for steelhead/rainbow trout. At the watershed-scale, changes to flows by Project activities will not occur. Drafting will occur at sites potentially occupied by frogs. Whereas changes in flows upon the NF Salmon River will not be measurably affected, the Garden Gulch sites are located within small systems and drafting may result in localized decreases in flow downstream. However, BMPs guide drafting operations such the drafting rate should not exceed 50% of the surface flow and that drafting will cease once bypass flows drop below 10 gallons per minute. Frogs downstream of the Garden Gulch sites may experience temporary decreases in flows while drafting is happening, but the channel will not go dry. When drafting stops, stream flow is returned to pre-draft conditions, so no long-term effects will occur.

The drainage network will be as described for steelhead/rainbow trout. While there may be some short-term increases in the drainage network associated with landings, skid trails, and temporary roads, in the long-term there will be a slight decrease due to hydrologic stabilization.

Impacts to the Riparian Reserve will be as described for steelhead/rainbow trout. Resource protection measures will ensure RR character will not be detrimentally altered by hazard tree abatement. Water drafting and Kelly Gulch culvert replacement may have insignificantly small localized effects, but there will be no effect to the functional level of the RR.

Overall, individual tailed frogs may be affected and there may be some short-term, insignificant impacts to habitat. Except for removal of an aquatic organism barrier and an insignificant benefit via a decrease in (human-created) drainage network, no long-term effects to frogs or their habitat are expected.

Cumulative Effects - There will be minimal cumulative impacts from adding the effects of this alternative to those of reasonably foreseeable future actions. Where there is spatial or temporal overlap of projects currently undergoing implementation, the effects of these projects have already been accounted for in the existing environment. Where future actions do overlap with the Project, there will be insufficient additive impact to adversely affect tailed frogs or their habitat.

Alternative 3

Direct and Indirect – Alternative 3 differs from Alternative 2 in regards to magnitude of impact.

Direct and indirect effects from water drafting will remain the same.

This alternative proposes to eliminate salvage harvest units, although hazard tree felling and legacy site repair, including the Kelly Gulch culvert upgrade, would be as described for Alternative 2. Most activities required to support salvage harvest, such as landing and temporary road construction, would no longer be required, although water drafting for dust abatement may still occur. Because salvage harvest, and its associated actions, creates greater ground disturbance than other Project elements, post-Project changes in CWE models show a lesser increase than under the Alternative 2 scenario. It is doubtful the computer modeling will translate to real-world distinction between the two alternatives because natural variation will overwhelm the small differences in post-Project CWE outputs. Regardless, there will be no significant effects to aquatic habitat because models either remain below the critical threshold or do not contribute to existing over-threshold risks. Beneficial effects due to treatment of the Kelly Gulch culvert remain as described for Alternative 2. Conversely, there will be no change from the baseline drainage network condition because there will be no need for temporary roads to access salvage units.

Cumulative – Cumulative effects will be the same as described under the Alternative 2.

American Dipper, Long tailed Vole, and Northern Water Shrew

Environmental Baseline

American dippers, long-tailed vole, and northern water shrew are expected throughout the project area wherever running water occurs (24 miles of perennial and 39 miles of intermittent streams).

Effects of the Proposed Project

Alternative 1

Under this alternative, the Salmon Salvage proposed actions will not occur, and thus there will

be neither ground disturbance nor water diversion/drafting. Water quality parameters (such as stream temperatures, nutrients, turbidity, etc.) and substrate (e.g., sediment fines within gravels, pools, etc.) will therefore be unaltered from current conditions.

Alternative 2

Direct and Indirect – Drafting at sites potentially occupied by frogs will occur at six locations within the Project area – NF Salmon River (3 sites) and Garden Gulch drainage (3 sites). As drafting will occur at established access points, there will be no new construction and, therefore, no alteration of the existing riparian or new delivery of sediment to the system. Possible area of very minor and insignificant impact in the analysis area would be the immediate vicinity of the drafting area when the pump is in operation. Water drafting will also result in slight, temporary decrease in flow, as well as a small sediment plume, both of which are considered insignificant. When drafting stops, stream flow is returned to pre-draft conditions, so no long-term effects will occur. Water temperature and other water quality elements will not be affected. These actions will have minimum effect to American dipper, northern water shrew, and long-tailed vole.

Cumulative Effects - There will be no short- or long-term cumulative effects to American dipper, northern water shrew, and long-tailed vole habitat or American dipper, northern water shrew, or long-tailed vole populations.

Alternative 3

Direct and Indirect – Alternative 3 differs from Alternative 2 in regards to magnitude of impact.

Direct and indirect effects from water drafting will remain the same as in Alternative 2.

This alternative proposes to eliminate salvage harvest units, although hazard tree felling and legacy site repair, including the Kelly Gulch culvert upgrade, would be as described for Alternative 2. Most activities required to support salvage harvest, such as landing and temporary road construction, would no longer be required, although water drafting for dust abatement may still occur. Because salvage harvest, and its associated actions, creates greater ground disturbance than other Project elements, post-Project changes in CWE models show a lesser increase than under the Alternative 2 scenario. It is doubtful the computer modeling will translate to real-world distinction between the two alternatives because natural variation will overwhelm the small differences in post-Project CWE outputs. Regardless, there will be no significant effects to aquatic habitat because models either remain below the critical threshold or do not contribute to existing over-threshold risks. Beneficial effects due to treatment of the Kelly Gulch culvert remain as described for Alternative 2. Conversely, there will be no change from the baseline drainage network condition because there will be no need for temporary roads to access salvage units.

Cumulative – Cumulative effects will be the same as described under Alternative 2.

Western Pond Turtle (*Emys marmorata*)

Environmental Baseline

Western pond turtles are a highly aquatic species that can be found in ponds, lakes, streams, rivers, marshes, and irrigation ditches that have a muddy or rocky bottom and abundant vegetation (Stebbins 2003). They feed on aquatic plants, insects, worms, fish, and carrion.

Western pond turtles use terrestrial habitat for nesting and sometimes for overwintering. Females lay their eggs in soil and have been recorded nesting up to 300' from water (Holland 1991). Holland (1991) reported that individuals moved an average of 600' from water to their overwintering sites.

In the salvage analysis area, western pond turtle habitat only occurs along eight miles of the North Fork of the Salmon River. Western pond turtle is also analyzed as a management indicator species representing marsh, lake, and pond habitat.

Direct and Indirect Effects

Alternative 1

Under alternative 1 no activities would occur so no direct or indirect effects would occur.

Alternative 2 and 3

Salvage and roadside hazard operations will not have any effect on western pond turtle or their habitats. These activities will adhere to Project Design Features and with the limited activities proposed in riparian habitat in the watershed, alternatives 2 and 3 will not affect riparian habitat conditions for the western pond turtle in the analysis area. Drafting proposed in three isolated locations on the North Fork Salmon River (Red Bank campground; Gallia Pond; downstream of Jackass Creek) will follow Project Design Features for drafting as to not create expected impact to western pond turtles or their habitat.

Cumulative Effects

Within the Project Area, three known projects are planned or are being implemented; a proposed (about 1,500 acre) community wildfire protection and forest health project (Jess Project), a reforestation project (Salmon Reforestation Project), and wildfire management project (Yellow-Jacket Ridge Project). The Jess Project focuses on forest health by reducing forest disease and increasing forest resiliency to wildfire thus promoting high quality habitat over the long term. The Jess Project proposes several treatments such as fuels, prescribed fire, commercial thinning, non-commercial thinning, and tree planting. The Salmon Reforestation Project proposes to plant trees within a portion of the Salmon Complex Fire perimeter. The Yellow-Jacket Ridge Project is a planned fuel break along the 40N51 road that is designed to reduce fuel loading within the fuel break area, thereby decreasing the potential for high-intensity fire within and around the project area.

The proposed Jess, Salmon Reforestation, and Yellow-Jacket Ridge Project will provide benefits to the Salmon Salvage Project. The Salmon Reforestation Project will promote and accelerate forest regeneration thus providing habitat more quickly. The Jess Project will aid in reducing the risk of wildfire moving into the already burned Salmon Complex Fire perimeter which will allow the forest to regenerate more quickly. Likewise, the Yellow-Jacket Ridge Project will assist in reducing wildfire moving into the fire perimeter. Therefore the additive effects of the proposed

Salmon Reforestation, Jess, and Yellow-Jack Ridge Projects along with the effects discussed in this document will create no additional effects to the species.

Determination

Due to the factors described above, the Salmon Salvage Project will have **no effect** to the western pond turtle.

SNAG SPECIES ASSOCIATION

Red-breasted sapsuckers, hairy woodpeckers, downy woodpeckers, white-headed woodpeckers, Vaux's swifts, pileated woodpeckers, and black-backed woodpeckers were selected as Snag Associated species for which habitat exists in the project area. Standards and Guidelines from the Forest Plan that are being implemented as part of the Salmon Salvage include retention of an average of 8 large snags per acre in Late Successional Reserves and 5 large snags per acre across the other areas to be salvaged. On the surrounding landscape of the wildlife analysis area, snag levels will meet or exceed 5 per acre in a variety of size classes. By implementation of Standards and Guideline, at a minimum, the proposed project prescriptions maintain moderate capability snag habitat in the majority of treatment units and high capability habitat in Late Successional Reserve and untreated parts of the project area ("capability" as determined in the Forest Plan EIS, Appendix I, Wildlife Habitat Capability Model for Cavity Nesting and Decadence Wildlife Assemblage). In addition to Standards and Guidelines above, which provide for a guidance to manage for snags as a habitat component, riparian reserves protect and enhance conditions of late-successional forests. Riparian reserves are habitat "reserves" where populations of snag-dependent species will be largely unaffected by land management activities. The analysis area for snag-associated species in the Salmon Salvage project is the same as the "project area."

Red-breasted sapsucker

Environmental Baseline

The project area is large enough in size to potentially contain habitat for several red-breasted sapsucker territories. There are 13,271 acres of mid-seral and mature mixed conifer habitat, potentially suitable for sapsuckers, scattered throughout the project area on Forest Service and private land. Habitat in the project area is currently moderate capability for sapsuckers.

Red-breasted sapsuckers have not been documented in the project area but it is assumed that they would occur there. Red-breasted sapsuckers are not considered a common species and little is known about local distribution and abundance. In Modoc County, California, home-ranges have been reported up to 15 acres.

Effects of the Proposed Project

Alternative 1

There would be no change in the amount or quality of snag habitat in the project area; risk of stand replacing fire would remain moderate to high in the landscape.

Alternative 2

Eight hundred and twenty seven acres of potential habitat for red-breasted sapsucker are located within treatment units. Proposed treatments will maintain the availability of large snags at 5-8 snags per acre.

Proposed harvest and post-harvest activity fuels treatments should not affect suitable habitat for red-breasted sapsuckers. Harvest will remove some snag recruitment trees within the 1,3303 acres of treatment. Forest S&Gs snag minimums will be maintained or exceeded in these treated areas. Snag habitat should remain abundant and well distributed after treatments. Outside of treated areas snag habitat will remain abundant throughout the 7th field watersheds. Some snags within units may be felled for safety reasons. Felling of individual snags will be scattered and infrequent and will not have a measurable effect on the amount of habitat in the project units.

All treated acres will remain at moderate capability after harvest. No habitat patches equal to the size of sapsucker home ranges (15 acres) will be removed through timber harvest.

Alternative 3

Five hundred and sixty nine acres of potential red-breasted sapsucker habitat are located within roadside treatment units. Proposed treatments will maintain the availability of large snags at 5-8 snags per acre.

Proposed harvest and post-harvest activity fuels treatments should not affect suitable habitat for red-breasted sapsuckers. Harvest will remove some snag recruitment trees with in the 1,303 acres of treatment. Forest S&Gs snag minimums will be maintained or exceeded in these treated areas. Snag habitat should remain abundant and well distributed after treatments. Outside of treated areas snag habitat will remain abundant throughout the 7th field watersheds. Some snags within units may be felled for safety reasons. Felling of individual snags will be scattered and infrequent and will not have a measurable effect on the amount of habitat in the project units.

All treated acres will remain at moderate capability after harvest. No habitat patches equal to the size of sapsucker home ranges (15 acres) will be removed through timber harvest.

Hairy Woodpecker and Downy Woodpecker

Environmental Baseline

These two woodpecker species are associated with mature mixed conifer, but are more specifically linked with deciduous riparian habitats interspersed along streams within mixed conifer forest. The project area contains about 8,980 acres of habitat.

It is assumed that both hairy and downy woodpeckers occur throughout the project area. Both hairy and downy woodpeckers are considered common species, although little is known about local distribution and abundance. In Ontario, breeding territories for hairy woodpeckers ranged from 6 to 8 acres and ranged from 5 to 9 acres for downy woodpeckers.

Effects of the Proposed Project

Alternative 1

There would be no change in the amount or quality of snag habitat in the project area; risk of stand replacing fire would remain moderate to high in the landscape.

Alternative 2

Four hundred and seventy five acres of potential hairy and downy woodpecker habitat are located within treatment units. Proposed treatments will maintain the availability of large snags at 5-8 snags per acre.

Proposed harvest and post-harvest activity fuels treatments should not affect suitable habitat for red-breasted sapsuckers. Harvest will remove some snag recruitment trees within the 1,303 acres of treatment. Forest Standards and Guideline snag minimums will be maintained or exceeded in these treated areas. Snag habitat should remain abundant and well distributed after treatments. Outside of treated areas snag habitat will remain abundant throughout the 7th field watersheds. Some snags within units may be felled for safety reasons. Felling of individual snags will be scattered and infrequent and will not have a measurable effect on the amount of habitat in the project units.

Alternative 3

Three hundred and thirty three acres of potential hairy and downy woodpecker habitat are located within roadside treatment units. Proposed treatments will maintain the availability of large snags at 5-8 snags per acre.

Proposed harvest and post-harvest activity fuels treatments should not affect suitable habitat for these species. Harvest will remove some snag recruitment trees within the 1,303 acres of treatment. Forest S&Gs snag minimums will be maintained or exceeded in these treated areas. Snag habitat should remain abundant and well distributed after treatments. Outside of treated areas snag habitat will remain abundant throughout the 7th field watersheds. Some snags within units may be felled for safety reasons. Felling of individual snags will be scattered and infrequent and will not have a measurable effect on the amount of habitat in the project units.

All treated acres will remain at moderate capability after harvest.

White-headed Woodpecker, Vaux's Swift, and Pileated Woodpecker

Environmental Baseline

The analysis area is large enough in size to potentially contain habitat for several white-headed woodpecker territories (average 15 acres in Blue Mountains) and enough habitats for up to one pileated woodpecker foraging areas (500-1200 acres). Vaux's swift territories may be limited to individual trees. There are 10,905 acres of mature mixed conifer and true fir habitat, potentially suitable for swifts and woodpeckers, on Forest Service land. White-

headed and pileated woodpeckers have been detected in the project area. Vaux's swifts are suspected to exist in the area. Little is known about local distribution and abundance of these species.

Effects of the Proposed Project

Alternative 1

There would be no change in the amount or quality of snag habitat in the project area; risk of stand replacing fire would remain moderate to high in the landscape.

Alternative 2

Nine hundred and sixty acres of potential habitat occur in the proposed treatment units. Proposed treatments will maintain the availability of large snags at 5-8 snags per acre.

Proposed harvest and post-harvest activity fuels treatments should not affect suitable habitat for these species. Harvest will remove some snag recruitment trees within the 1,303 acres of treatment. Forest S&Gs snag minimums will be maintained or exceeded in these treated areas. Snag habitat should remain abundant and well distributed after treatments. Outside of treated areas snag habitat will remain abundant throughout the 7th field watersheds. Some snags within units may be felled for safety reasons. Felling of individual snags will be scattered and infrequent and will not have a measurable effect on the amount of habitat in the project units.

Alternative 3

Three hundred and thirty eight acres of potential habitat are located within roadside treatment units. Proposed treatments will maintain the availability of large snags at 5-8 snags per acre.

Proposed harvest and post-harvest activity fuels treatments should not affect suitable habitat for these species. Harvest will remove some snag recruitment trees within the 1,303 acres of treatment. Forest S&Gs snag minimums will be maintained or exceeded in these treated areas. Snag habitat should remain abundant and well distributed after treatments. Outside of treated areas snag habitat will remain abundant throughout the 7th field watersheds. Some snags within units may be felled for safety reasons. Felling of individual snags will be scattered and infrequent and will not have a measurable effect on the amount of habitat in the project units.

All treated acres will remain at moderate capability after harvest.

Black-backed Woodpeckers

Environmental Baseline

The analysis area contains approximately 1,925 acres of mature fir habitat. Although black-backed woodpeckers are associated with fir habitats, they are more commonly associated with fir and lodgepole pine at high elevations (>6000 feet) in the Cascade Mountains

(eastside of the Klamath). Black backed woodpeckers may be found in the project area.

Effects of the Proposed Project

Alternative 1

There would be no change in the amount or quality of snag habitat in the project area; risk of stand replacing fire would remain moderate to high in the landscape.

Alternative 2

One hundred and thirty four acres of black-backed woodpecker habitat occurs in the analysis area and only five of those acres of habitat occur in the treatment units. Proposed treatments will maintain the availability of large snags at 5-8 snags per acre thus creating enough snag habitat to support black-backed woodpeckers

Proposed harvest and post-harvest activity fuels treatments should not affect suitable habitat for black backed woodpeckers. Snag habitat should remain available in the 134 acres of mature fir habitat in the analysis area after treatments. Outside of treatment unit snag habitat will remain abundant throughout the surrounding 7th field watershed. Some snags within units may be felled for safety reasons. Felling of individual snags will be scattered and infrequent and will not have a measurable effect on the amount of habitat in the project units.

Alternative 3

Like alternative 2, five acres of potential habitat are located within treatment units. Proposed treatments will not affect the availability of large snags thus the effects to black-backed woodpecker will be small

Comparison of Effects

The table below summarizes and compares the effects of the three alternatives on MIS habitat and most of this information is also available in Part1 of the MIS Report. The proposed actions are expected to have minor effects to the existing habitat. The recommended number of snags per acre will be maintained or exceeded in the salvage treatment units (Forest Plan Standard and Guide 8-22).

Habitat Association	Management Indicator Species	Alternative 1	Alternative 2	Alternative 3
Snag Species Association	Red-breasted Sapsucker	13,271 acres of mid-seral dense habitat with mixed fire-effects in the analysis area will remain unaffected	827 acres of mid-seral dense habitat with mixed fire-effects overlap with the proposed activities	569 acres of mid-seral dense habitat with mixed fire-effects overlap with the proposed activities

Habitat Association	Management Indicator Species	Alternative 1	Alternative 2	Alternative 3
	White-headed woodpecker, Pileated woodpecker and Vaux's swift	10,905 acres of dense mature fir and mixed conifer with mixed fire-effects in the analysis area will remain unaffected	439 acres of dense mature fir and mixed conifer with mixed fire-effects overlap with the proposed activities	338 acres of dense mature fir and mixed conifer with mixed fire-effects overlap with the proposed activities
	Hairy Woodpecker and Downy Woodpecker	8,980 acres of dense mixed conifer habitat with mixed fire effects in the analysis area will remain unaffected	475 acres of dense mixed conifer habitat with mixed fire effects overlap with the proposed activities	333 acres of dense mixed conifer habitat with mixed fire effects overlap with the proposed activities
	Black-backed woodpecker	134 acres of mature fir with mixed fire effects in the analysis area will remain unaffected	5 acres of mature fir with mixed fire effects overlap with the proposed activities	5 acres of mature fir with mixed fire effects overlap with the proposed activities
River/Stream Species Association	Tailed frog	About 62 miles of perennial streams and 63 miles of intermittent stream in the 7 th field watershed will remain unaffected by the proposed treatments	About 39 miles of perennial stream and about 24 miles of intermittent stream overlap with and may be affected by the proposed activities.	About 39 miles of perennial stream and about 24 miles of intermittent stream overlap with and may be affected by the proposed activities.
	American dipper	About 62 miles of perennial streams and 63 miles of intermittent stream in the 7 th field watershed will remain unaffected by	About 39 miles of perennial stream and about 24 miles of intermittent stream overlap with and may be	About 39 miles of perennial stream and about 24 miles of intermittent stream overlap with and may

Habitat Association	Management Indicator Species	Alternative 1	Alternative 2	Alternative 3
		the proposed treatments	affected by the proposed activities.	be affected by the proposed activities.
	Northern water shrew	About 62 miles of perennial streams and 63 miles of intermittent stream in the 7 th field watershed will remain unaffected by the proposed treatments	About 39 miles of perennial stream and about 24 miles of intermittent stream overlap with and may be affected by the proposed activities.	About 39 miles of perennial stream and about 24 miles of intermittent stream overlap with and may be affected by the proposed activities.
	Long-tailed vole	About 62 miles of perennial streams and 63 miles of intermittent stream in the 7 th field watershed will remain unaffected by the proposed treatments	About 39 miles of perennial stream and about 24 miles of intermittent stream overlap with and may be affected by the proposed activities.	About 39 miles of perennial stream and about 24 miles of intermittent stream overlap with and may be affected by the proposed activities.
Marsh/Lake/Pond Species Association	Western pond turtle	About 8 miles of perennial stream in the 7 th field watershed will remain unaffected by the proposed treatments	About 8 miles of perennial stream overlap with and may be affected by the proposed activities.	About 8 miles of perennial stream overlap with and may be affected by the proposed activities.

MIS Habitat by MIS Species

<u>MIS Species</u>	<u>MIS Habitat</u>
Acorn Woodpecker	Oak
Western Gray Squirrel	Oak
Hairy Woodpecker	Mat MC, Mat dense MC
Downy Woodpecker	Mat MC, Mat dense MC
White headed Woodpecker	Mat F, Mat MC, and Mat dense MC
Vaux's Swift	Mat F, Mat MC, and Mat dense MC
Pileated Woodpecker	Mat F, Mat MC, and Mat dense MC
Red breasted Sapsucker Mat	MC, Mat dense MC, and mid seral
Black backed woodpecker	Mat F

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